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Social Media Optimization and Business Integration

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This final year thesis project has been aimed to show the benefits of integrating a company site into social networking sites. It is very important because any company can use this thesis project to make the integration especially using Facebook as their social networking promoting tool. The main goal of this study was to help the Spark Skills company to have many users into their database from all over the globe.

The technologies used in this project are the Facebook Platforms and the Yii framework. The result of the project was a Facebook application which has some of the services that the Sparks Skills website offers, and in addition, it supports the Facebook Like and Comment options. When a person uses one of the two features, it will appear on the wall of the person's and the Spark Skills' Facebook page so that it will promote the Spark Skills website through their network. We can use the Facebook Insights to analyze the our application and its users.

Keywords	Social Media Optimization, Facebook Integration, Yii, Web 2.0

Contents

Abbreviations and Terms

Alternative PHP Cache (APC) - is a free and open opcode cache for PHP. Its goal is to provide a free, open, and robust framework for caching and optimizing PHP intermediate code.

API (Application Program Interface) - a language and message format used by an application program to communicate with the operating system or some other control program such as a database management system (DBMS) or communications protocol.

Active Record (AR) - is a popular Object-Relational Mapping technique.

Ajax (Asynchronous JavaScript And XML) - a collection of techniques for creating interactive web applications without having to reload the complete web page in response to each user input, thus making the interaction faster.

Blogging - a journal written on-line and accessible to users of the internet

Facebook (FB) - the name of a social-networking service and Web site, launched in 2004.

Flash - A bandwidth friendly and browser independent vector-graphic animation technology. As long as different browsers are equipped with the necessary plug-ins, Flash animations will look the same.

Gii - Yii's Web-based code generation tool.

Loosely Coupled - refers to software where routines, modules, functions, and similar components are executed only as needed, and do not run at the launch of the software application and while it is being used. Web services are a type of software application that uses loose coupling.

Internet Relay Chat (IRC) - a chat system developed by Jarkko Oikarinen in Finland in the late 1980s.

Mash-ups - a new breed of Web-based applications created by hackers and programmers (typically on a volunteer basis) to mix at least two different services from disparate, and even competing, Web sites.

Object-Relational Mapping (ORM) - is a mechanism that makes it possible to address, access and manipulate objects without having to consider how those objects relate to their data sources.

Rich Internet Applications(RIA) - are Web-based applications that function as traditional desktop applications however Web browsers (or clients) are required for access but unlike traditional applications, software installation is not required, however depending on the application you usually will need to have ActiveX, Java, Flash, or similar technologies installed on the client machine.

RSS - is the acronym used to describe the de facto standard for the syndication of Web content. RSS is an XML-based format and while it can be used in different ways for content distribution, its most widespread usage is in distributing news headlines on the Web.

Service Oriented Architectures (SOA) - an application architecture in which all functions, or services, are defined using a description language and have invokable interfaces that are called to perform business processes.

Web Services - describes a standardized way of integrating Web-based applications using the XML, SOAP, WSDL and UDDI open standards over an Internet protocol backbone.

1 Introduction

This final year thesis project has been aimed to show the benefits of integrating a web site into social networking sites. Hopefully any company can use this thesis project to make the integration especially using Facebook as their social networking promoting tool. The goal of this final year thesis was to help the Spark Skills company to have many users into their database from all over the world. In order to do this we some of the Spark Skills features will be integrated into its Facebook page.

Since the creation of the internet the PC has been able to put us in touch with people from all over the world. The first tool that used for socializing was an email. Since then the need to socialize has increased and platforms are set which enables instant communication not just with people that we are friends with but also new friends from all over the globe. [1,10]

It was this urge that prompted Jarkko Oikarinen, a reasercher of the Department of Information Processing Science in the University of Oulu, Finland, to program the first tool that let us chat over the Net called IRC (Internet Relay Chat) client and server in 1988. Around the mid of 1990 there were about 40 servers running worldwide each with an average of 12 users. [1,11]

The first social networking site that came around the year 1995 was Classmates.com. Then in 1997 the second social networking site SixDegrees.com emerged. Social networking as we know it really took off with Friendster.com, launched in 2002. [1,12]

In December 2011 Facebook had 845 million monthly active users. About(Arround) half of them are active daily and about 80% of the monthly active users are outside the U.S. and Canada. [2]

Being able to use the tools provided by social networking portals such as Facebook means that you can transmit information, increase the number of users that visits your site, and even create an application that allow users to get the services that your company provides. [3]

Spark Skills is a service that provides people Skills and Opportunities anywhere on the globe. Their aim is ”to help people to connect with each other by providing an easy and intuitive way of showing what people can do and how they use their skills” [26].

Some of the features Spark Skill provides are promoting the skills and talents of their users worldwide, and giving exposure to people with special talents to be discovered by employers. These also promotes freelancing opportunities, connects people with the same interest, enables talent recruitment, and fast freelancing recruitment for projects.

The application created for this project uses the Yii framework which has some of the features of the Spark Skills website only, and we created a Facebook application and made the integration through Facebook so that the users of Facebook can access those features.

2 Integration of social networking and business

2.1 Web 2.0 and Social Networking

A great deal of attention in the Web 2.0 and Social Networking fields has been toward customer interaction; that is, finding ways on how to bring more users in or collaborate better with them through web 2.0 technologies, increase brand or product awareness or increase revenue with viral marketing campaigns. Also, increasing customer satisfaction using dynamic pages that are updated almost automatically. [4,2]

What is Web 2.0?

The term Web 2.0 was introduced by Tim O’Reilly, founder and CEO of O’Reilly Media, Inc., and it became well known after the O’Reilly Media Web 2.0 conference in 2004 [4,2]. Its definitions were surprisingly elusive. Developers and non technical people have different views about the definition of the term web 2.0, even among the developer community [5, 9]. The idea of Web 2.0 definitely has some technical aspects, with the implementation and innovation of new technologies and standards within the web platform. [4,2]

There are many definitions for Web 2.0 but it can be broken down into three parts. The first part of web 2.0 is *Rich Internet Applications(RIA)*. Ajax and Flash are a good examples of technologies associated to it. This technology lets us bring some of the experiences, such as the drag and drop that we had on the desktop into a browser whether it is from user interface or usability point of view. [6]

The second part is SOA (Service Oriented Architectures). It defines how web 2.0 applications provide their functionalities in such a way as to other applications to interact and integrate the functionalities providing a much richer set of applications. The interaction are independent and loosely coupled. This key feature includes technologies such as Feeds, RSS, Web Services, and Mash-ups. [6;18]

The third part of this technology is the Social web. Web 2.0 applications have a tendency to interact with the end user. The end users are not only the users of the application but they are the one that generate the content of the application by Tagging the content, Blogging, adding to Wiki, doing a Podcast, uploading videos or pictures. The social nature of the application is that the user acts as the vital part of the data application by giving feedback and allowing the application to support the users who are using it.[6]

The three things that you should be looking for when building a web 2.0 application are: a programming language that is iterative, a very good Ajax support, and a very good web services support. An iterative programming language means you have the opportunity to update an application by easily adding features and deploying new features. It is vital when these applications are used by a huge number of users and you have to update them continuously. Secondly Ajax is used to create a rich and dynamic user experience as Windows-based applications and it is compatible with any browser. Finally web services is a key part of web 2.0 and you need a language to make is it very easy to control those services. [6]

Social Networking

As explained earlier, the Social Web is one of the technologies of Web 2.0 and it includes social networking sites such as MySpace and Facebook. Social networking is

based on a virtual community where users can put their ideas, activities, events, and interests within their individual networks for the purpose of meeting people, finding like minds, sharing content, discussion, collaboration etc. [4,14]

2.2 Evolution towards Web 2.0

In the traditional web, Web 1.0, the focus was on conveying information to end users. [4,2] The figure shown below shows the concept of Web 1.0, where there is a web-master or content creators who build and maintain the website to be used by end us-ers. Even though this model supports some dynamic features, all its contents are gen-erated by the web master. The users were not able to contribute the content. [4,3]

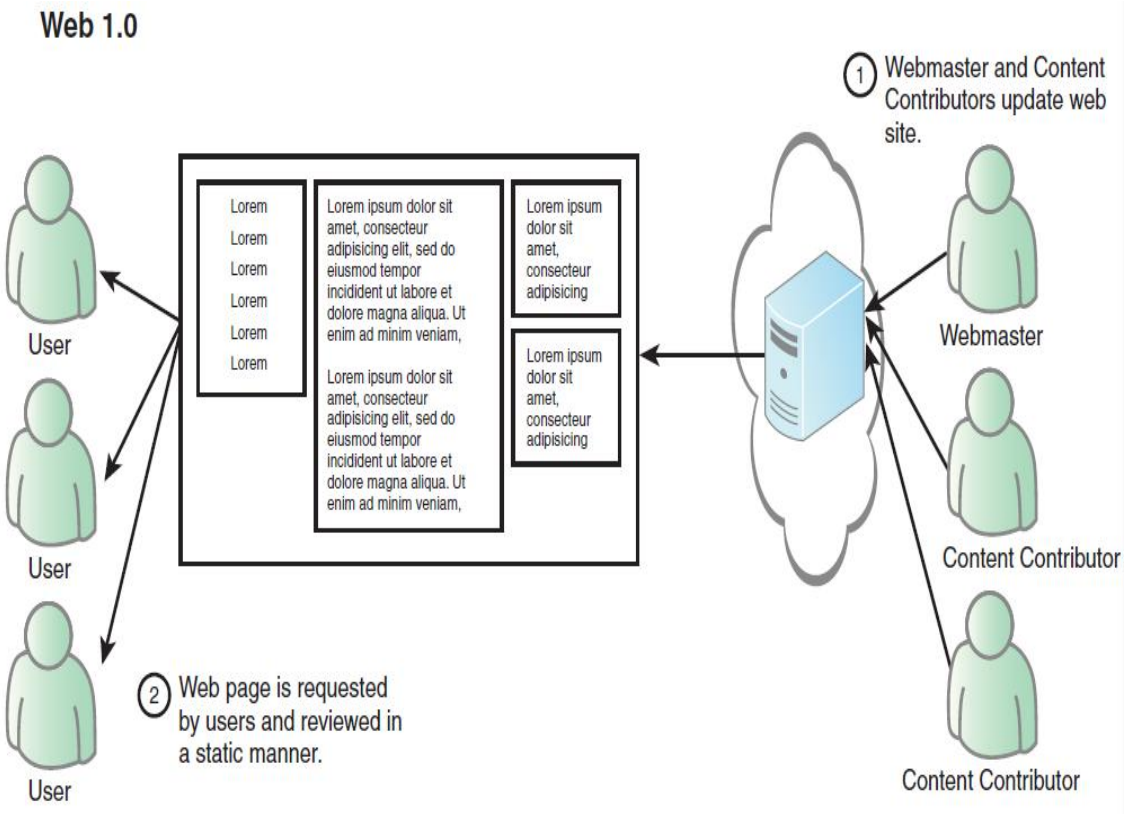


Figure 1. Web 1.0 paradigm [4]

In the Web 2.0 model the web master first builds the site and the content of the site will be contributed by the users. This two directional approach will give the users the feature to interact with the site and each other in ways that provide for a collaborative community. They can also generate, edit, and tag contents to guide and provide other users with new information. [4,4]

Web 2.0 is not only about providing data in new ways, it is also about improving the user interface and enabling end users to view data quicker and in more dynamic ways through richer user interfaces using Ajax and other technologies. [4,4]

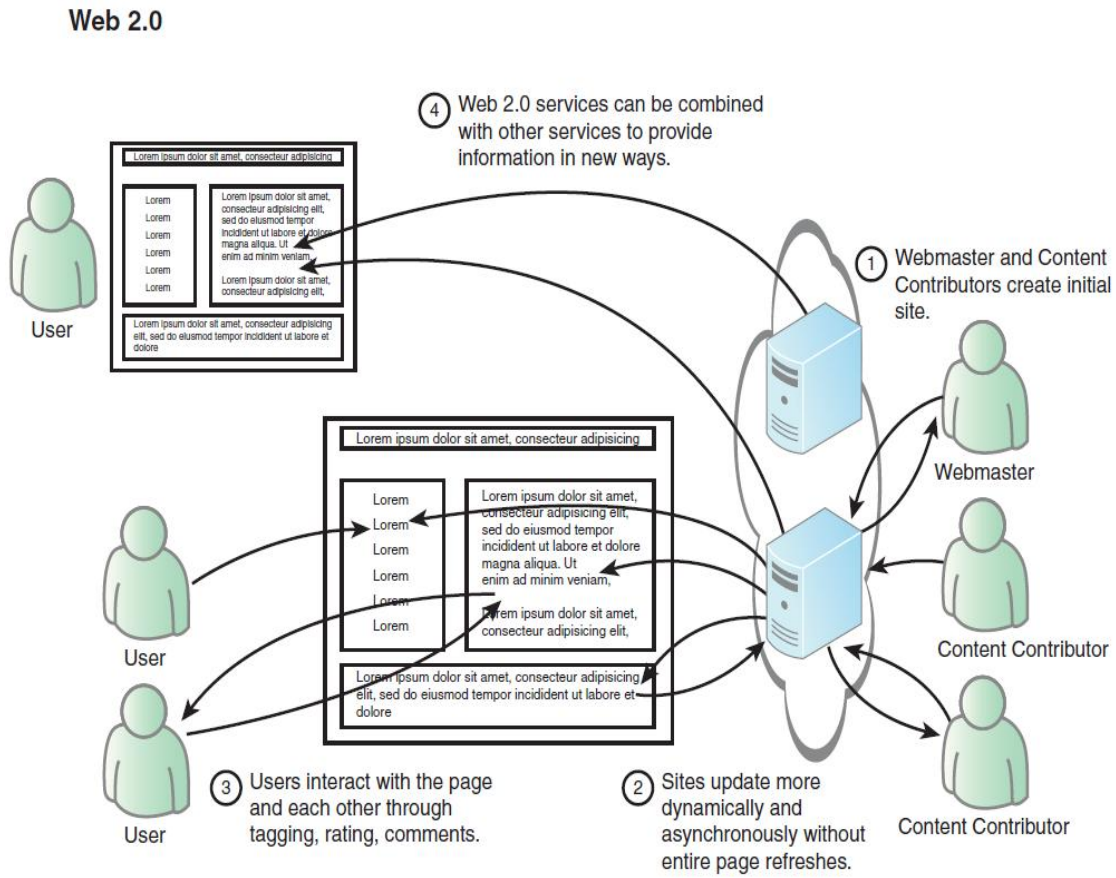


Figure 2. Web 2.0 paradigm [4,4]

The above figure shows in the first step of the creation of the site. Its content is created by the administrator and the content contributors and the site has also a future that can update more dynamically without refreshing the entire page.Later on the users can be in touch with the page and one another via some of the features such as tagging, rating, commenting, and sharing etc.

2.3 Social media benefits to business

The three laws that control the network value talk about the fundamental value of a network from the viewpoint of those connected to it. The potential value of any given

network can be credited on the basis of how the members are connected. The connection can be for example to a central source, or to one another, etc.[7]

Sarnoff's Law

One of the founders of the National Broadcasting Company (NBC) and leader the Radio Corporation of America (RCA) was David Sarnoff. Sarnoff's law states that for a network that supports communication from a single source, the value of the network increases in direct proportion to the number of its members. This law is the base for most media pricing models. [7]

"*A network with 100 people is therefore 10 times as valuable in terms of reach as a network with only 10, all other things being roughly equal. [7]"*

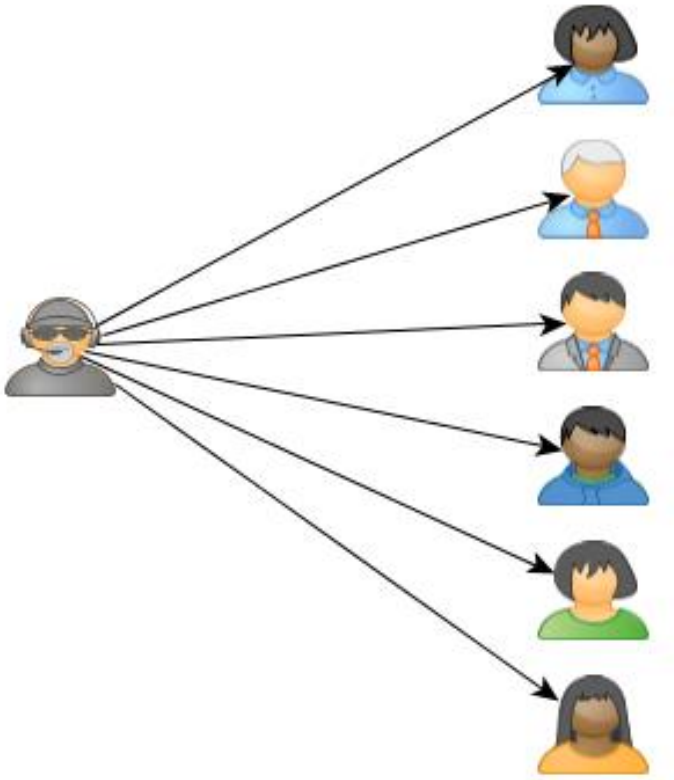


Figure 3. Fig. A network representing Sarnoff's Law[7]

Metcalfe's Law

This law is named after Robert Metcalfe an MIT graduate. It states that for networks that support communication between members the network value grows as the square of the number of users. The telephone communications and basic Internet networks are good examples that follow Metcalfe's Law.[7]

"A network of 100 people is roughly 100 times as valuable as a network of only 10 members." [7]

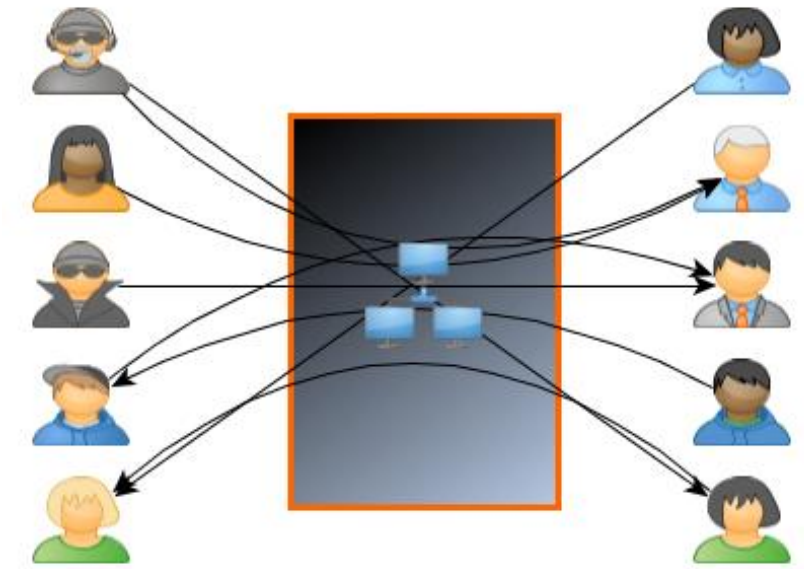


Figure 4. Fig. A network representing Metcalfe's Law[7]

Reed's Law

One of the computer scientists at MIT who has made a contribution in the area of computer networking is David P. Reed. Reed's Law is also called "The Law of the Pack". The law states that the network members can communicate not only with each other but also they communicate within the groups in the members. A good example of networks that follow this law are the social networking sites. [7]

"A network of 100 people is roughly 2^{90} (2 raised to the 90th power) times as valuable as a network of only 10 members."[7]

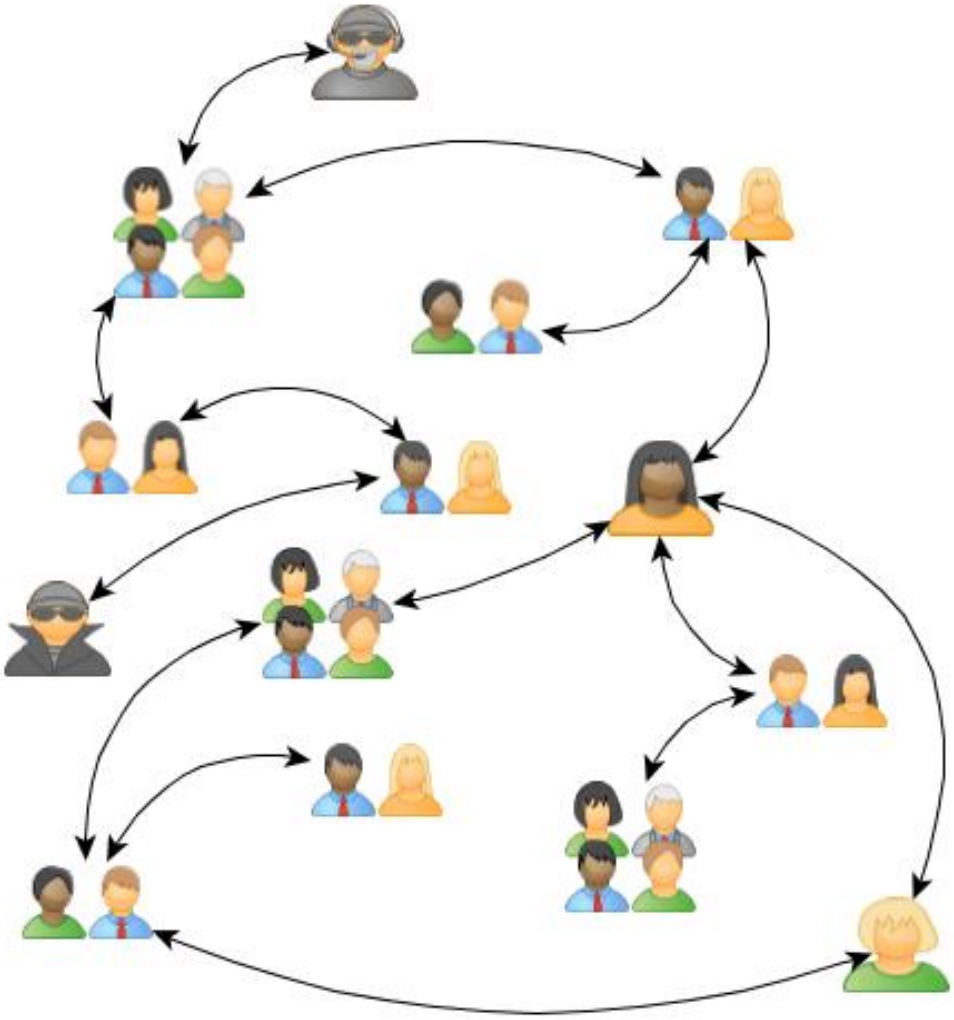


Figure 5. Fig. A network representing Reed's Law[7]

2.4 Why do we need social media integration?

For businesses the need to get awareness of one's brand, expand one's scope through social media channels, and to have a part in the discussions taking place, a door has opened for Social Media Optimization. [21] Social media integration would then simply mean combining the different social media networks together.

In order to create the integration, companies must first of all engage social media in today's business. This has become almost a requirement. Therefore, social media networks are the tools they will be utilizing. They must select the appropriate social media platform to ensure maximum reach to the audiences. They should also have an ap-

proach that ensure better engagement by the different users. Next, we can exploit the services provided by the social media platforms to the fullest via internal integration. With the features provided by the platforms we can easily move data into the platform. Finally, the content must be shared through readily available sharing tools. [22]

3 Methods and technologies

3.1 The Facebook web application model

The application that we are making will be accessed through Facebook by using a web browser and the Internet. The application will reside in our own web server shown in the diagram below. [13]

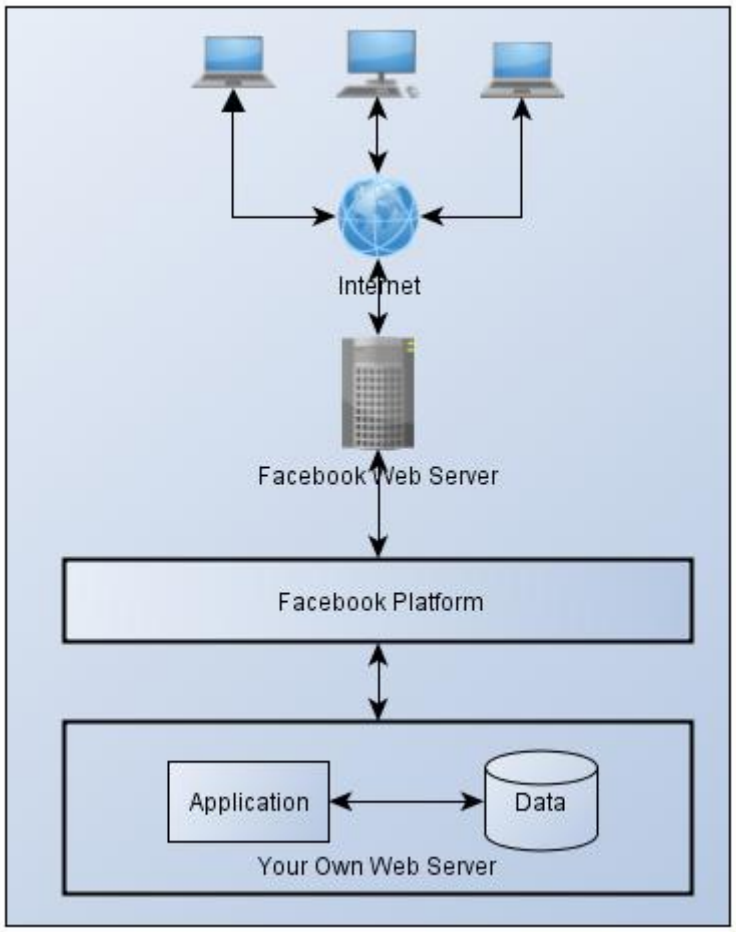


Figure 6. Facebook web application model [13]

As you can see from the above web application model, the application is going to be in our web server and the main function of the Facebook platform is to provide an interface between our application and itself. The question that you will be asking when the application resides in our web server, and if it becomes very successful (in December 2011 Facebook had around 400 million daily active users), is that can we manage the number of hits on our server? But the great thing about it is that whenever someone checks their profile it does not mean that our server will be accessed because Facebook employs a cache to stop that happening as shown in the diagram below. [13]

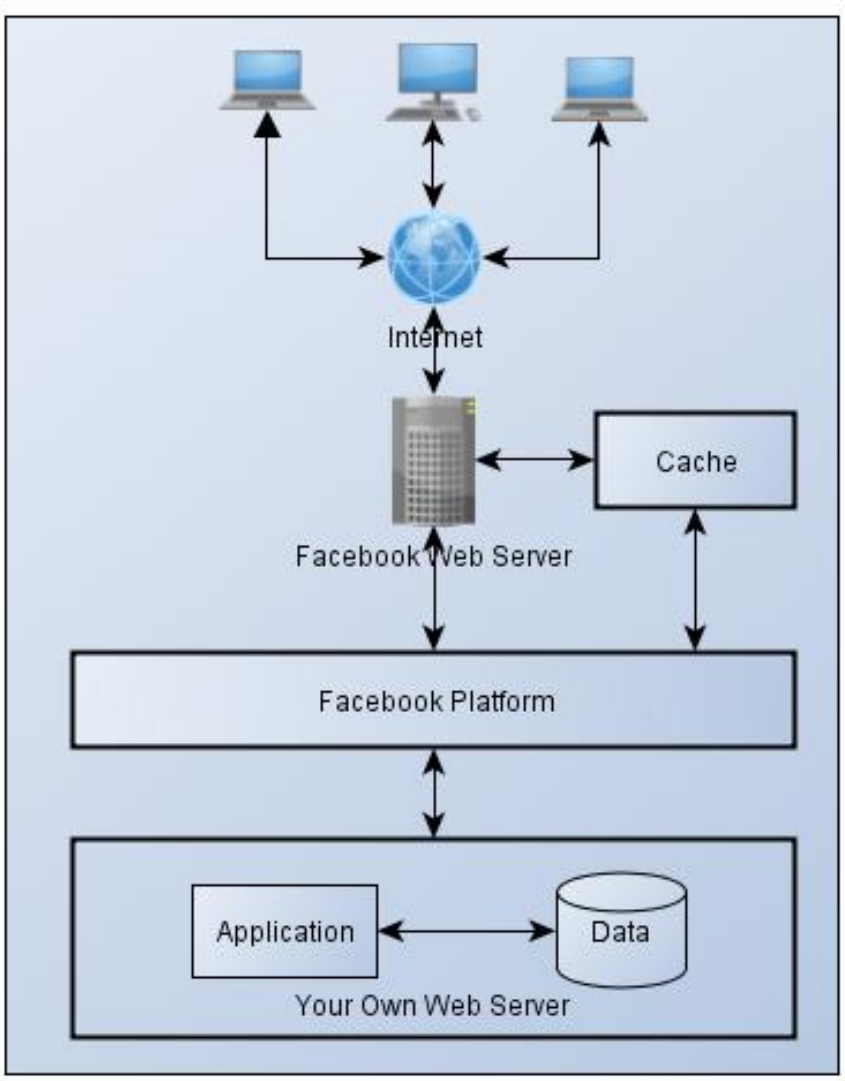


Figure 7. Facebook web application model [13]

The difference between Facebook personal and company page is summarized in the table below.

	Personal Profile	Company
Who is allowed to use them?	Individuals	Businesses and Individuals
Inviting friends	Yes	No. But you can invite people to join your company page from your personal profile page.
Status updating	Yes	Yes
Mass messaging friends	Yes	No
Are applications allowed?	Yes	Yes
Maximum number of friends	Limited to 5,000	Unlimited
Can you run analytics applications on the page?	No	Yes. You can use Facebook Insights

Table 1. Differences Between Facebook Company Pages and Personal Profile Pages[23,113]

3.2 The Facebook Platform Elements

Graph API

It's a set of software libraries that enable you to read and write data to Facebook. You can use them without knowing anything about its internal workings. [13]

Social Plugins

The social plugins allows you the possibility to bring social experiences to your users with a simple line of code. The like button, recommendation, comments, and the login button are some of the examples. Since the plugins are handled by Facebook, the content can be viewed in a customized manner considering if the users are logged in or not . [14]

Open Graph

Integrating your page into the social graph can be achieved using the Open Graph protocol. The social graph is the base of Facebook and it shows people and the connections they have to everything they are interested in. [15]

The diagram below shows the transition of the technologies that marketing people have used for the last 30 years. From emails to HTML, Google AdWords, iPhone, and now Open Graph.

Figure 8. Impactful innovations for marketers.[24]

The way search engines such as Google and Yahoo index the web is by considering pages relation with other pages and the number of pages associated to a page. The figure below shows how the open graph approach re-indexing the web around people relation with pages.
[24]

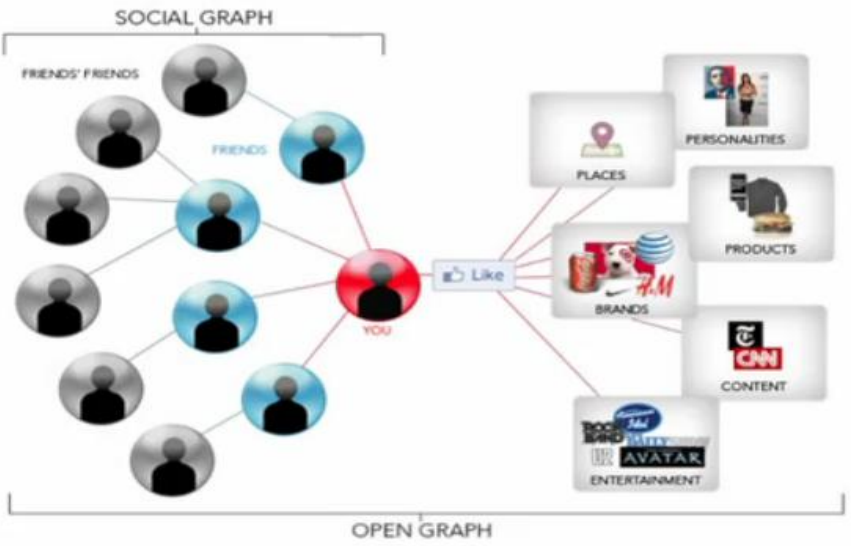


Figure 9. How Facebook re-indexing the web[24].

Authentication

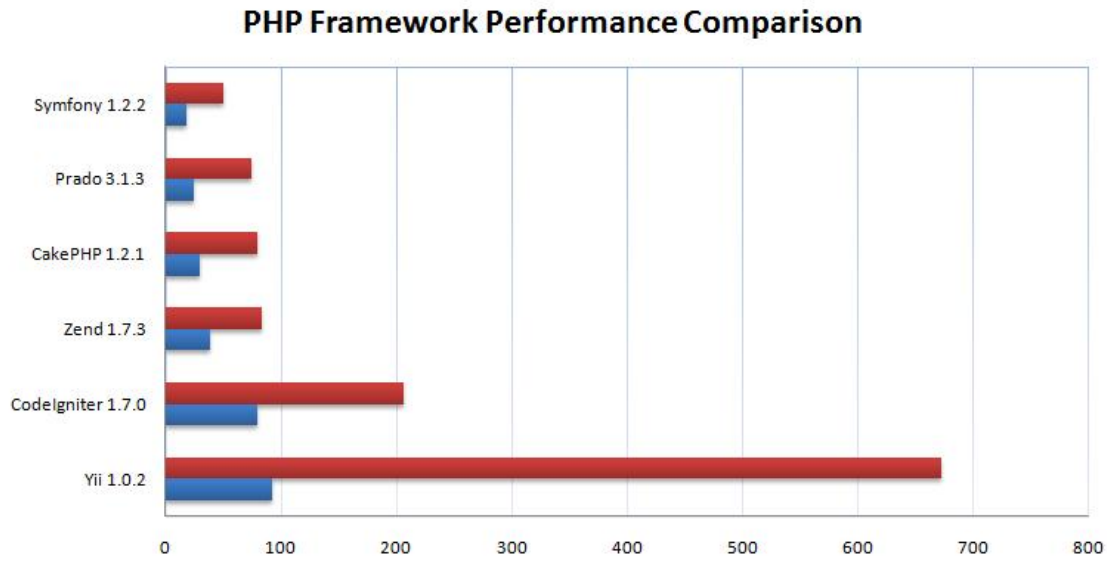
Authentication gives your application a powerful single login mechanism in order to know the identity of a Facebook user, reading and writing content privileges through Graph API.[16]

3.3 Yii Framework

Most PHP frameworks that exist at this moment provide the common features that are needed to develop web application and we do not need to code our application from scratch. Now a days it is not just the programming language that we need to choose to develop our application but also the framework that is available for the programming language is equally important. In addition, when the two are mostly paired, the outcome is an exceptionally powerful toolkit such as Ruby and Rails, C# and .NET, and PHP and Yii. [17]

"The name Yii is an acronym for *Yes, it is*, and it is pronounced as *Yee. It* stands for easy, efficient, and extensible." Yii is a high-performance, component-based, web application framework written in PHP 5. It is easy to create and maintain large-scale web applications with it that are better organized and which can be modified by changing or adding . [17]

Although the Zend framework is one of the most popular PHP frameworks, the Yii framework has become number one because of its ability to process more requests per second. As you can see from the graph below when the Alternative PHP Cache (APC) extension is enabled it has major performance gain. [25]



	Yii 1.0.2	CodeIgniter 1.7.0	Zend 1.7.3	CakePHP 1.2.1	Prado 3.1.3	Symfony 1.2.2
RPS with APC	673	206	83	79	75	50
RPS without APC	93	79	38	29	24	18

Figure 10. PHP frameworks comparison[25]

The model

The model class consists of data attributes that can have different user friendly labels for the purpose of display and they can be validated against a set of rules defined in the model. The fields in the user input form or a row of a database table are the data that made up the attributes of the model class. One of the models that are implemented by Yii is the active record model. [17]

Yii Active Record (AR) is a famous Object-Relational Mapping (ORM) implementation, in addition it makes database programming simpler. [20:75] Each AR class holds all the logic and details around database access, and lays out much of the business logic that is required to be applied to that data. The properties of the AR object are used to represent the data field values for each column in a table row.[17]

The view

The view is used for rendering a PHP script or HTML containing the user interface elements and the attributes in the model. We should always put a very simple conditional or looping PHP statements in the view. If we have a more complicated logic dealing

with the data, it should be in the model and if the logic is more general one the code should be in the controller. [17]

The controller

Functionalities such as taking user input, communicating with the model, and initiating the view to update and display properly are responsibilities of the controller. Therefore the controller is the main director of a routed request. [17]

"When a controller runs, it performs the requested action, which then interacts with needed models and renders an appropriate view. An action, in its simplest form, is a controller class method whose name starts with the word *action*." [17]

Most of the MVC implementations lifecycle is (1) Browser sends the request to the server (2) Controller handles the request (3) The controller works together with the model (4) The controller calls the view (5) The view renders the data as HTML and returns it to the browser for display. [17]

The diagram below illustrates the lifecycle of a Yii application.

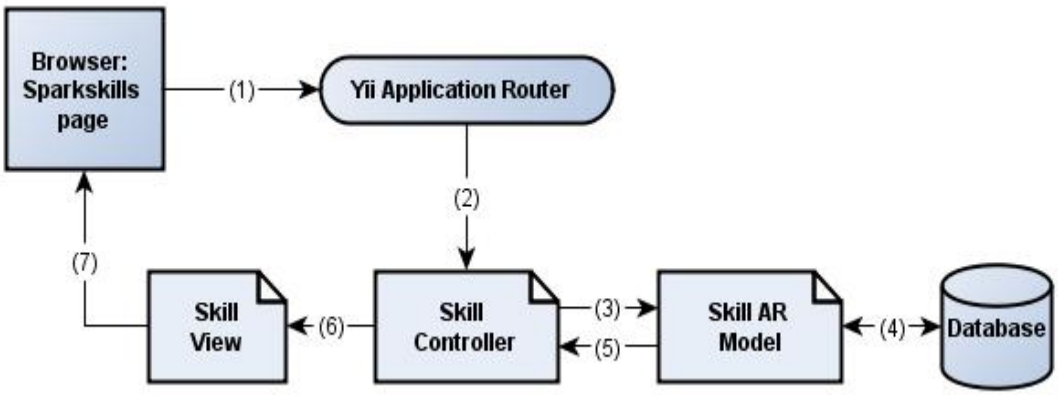


Figure 11. Lifecycle of a Yii application. [17]

When the (1) users types a url for example http://yourdominname/index.php?r= skill/view&id=9 on the browser and hits enter (2) it goes straight to the Yii application router and the router finds the Show action in the Skill controller. Then (3) the controller calls the AR model Skill (4) AR class interacts with the Skill table in the DB (5) Controller retrieves skill list content from AR (6)Controller renders the view (7) View converts content to HTML for browser display. [17]

4 Implementation of Facebook Application

4.1 Requirements

The general objective of this project is to develop an application that includes some of the features such as displaying a list of new skills and opportunities, a detail view of skills and opportunities, and some of the searching functionalities that exist in the Spark Skills website into their Facebook page.

The purposed system will broad the Spark Skills exposure to different Facebook users all over the world. The system will therefore;

- display the list of opportunities and skills
- display a detail view of opportunities and skills
- offer an option to make Facebook Comment
- offer a Facebook Like button
- offer a search functionality for skills, opportunities, and both.

The proposed system will have the following benefits:

- if the person likes the detail view of someone's Opportunity or Skill they have the possibility to use the Facebook Like button so that they can spread the word through their Facebook wall.
- when a person posts a comment on the detail view of an Opportunity or Skill the comment will be displayed below the detail view and it will also appear on their Facebook wall.

Users requirement definition

Even though all the users are from Facebook they can use the Spark Skills Facebook page for different purposes. People can use the Spark Skills service to look for a job and also to post job opportunities whether it is a freelancing or paying one.

Users with skills

These user groups are interested in working on a project as a freelancer or looking for a paying job. Users with skills and talents will create a profile and fill out information

about their skills and talents on the main Spark Skills web page (www.sparkskills.com). In the Facebook application case they can check the comments that they got from Facebook users.

Users offering opportunities

The users offering opportunities are the registered users which can be big or small companies and individuals who offer opportunities for a particular talent or skill set that could be freelancing or paying. They can get feedback from Facebook users.

Users searching skills and opportunities

This user group consists of unregistered users occasionally browsing the Spark Skills Facebook page searching for a particular talent or opportunity. They can use this application to view, comment, and like some of the services on Spark Skills Facebook page.

4.2 Architecture

This project is being designed using an Agile Web Application development approach. The architecture that we will be using is the Facebook Web Application Model. The applications will reside in the Spark Skills Web Server and the Facebook platform will serve as an interface between the application that we create on the Spark Skills and the platform.

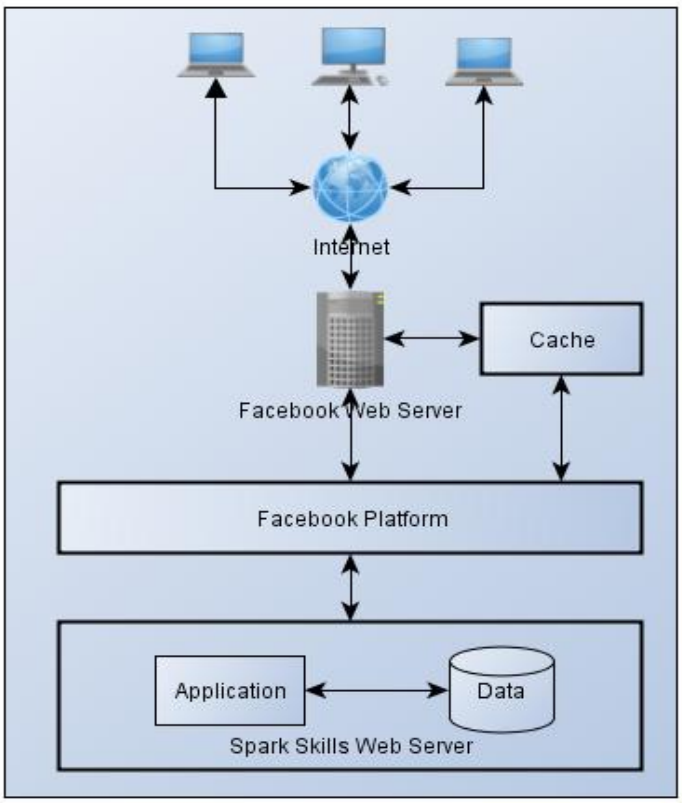


Figure 12. Spark Skills Facbook Application

4.3 Value chain of the application

A chain can be defined as a serious of links. A value chain is a serious of organizations, which take a product from input in a form of row material (a good example could be wood/grain) trough to a final product that is consumed (in this case the final product would be paper/bread). [9]

In a supply chain model businesses focus essentially on what they do and they push the product down the chain to the end user. On the other hand in a value chain model a product is pulled through the chain in response to what the consumers want and what they are willing to pay for. [9]

The value chain describes the full range of activities which are required to bring a service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. [10]

In one study it shows that designing the value chain for Web 2.0 is not easy, because first of all value chains are still originating, second the value chain depends on which application is considered, and finally some of the applications are created by non-profitable companies making value without any assumption of income.

Porter's general model was one of the most famous value chain models and it is shown in the figure below. The above four rows are called the support activities. They give support to the activities that add value but they do not add value in. The five columns at the end of the figure are the ones that add value to the organization's contributions in the marketplace. [20:305]

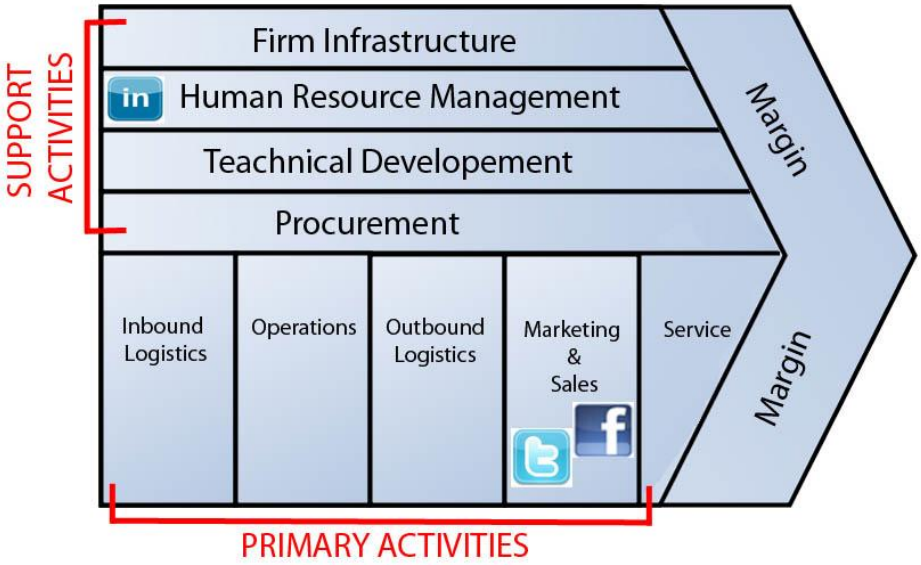


Figure 13. Where our application resides in Porter's general value chain model.

In the above value chain model the Facebook application will add a significant value on the Marketing activity. The contents of the Spark Skills site is generated by different users or organizations from all over the globe. Posting skills or opportunities in Spark Skills could be for either commercial or non-commercial incentive. Taking some of the feature of Spark Skills website into their Facebook company page will encourage the use of their full feature into their web site: in other words it will drive traffic to their site. The main idea is that by reaching out to Facebook audiences it is possible to promote their own content. [11]

For this project the value of the Facebook application will be evaluated by using the Facebook Insights application to monitor the activities in the Spark Skills' Facebook page. For example, we can analyze the increasing number of users and their graphysical locations, and how many times they used our content. [12]

4.4 Application Developement

Our applications Entity Relationship (ER) Diagram

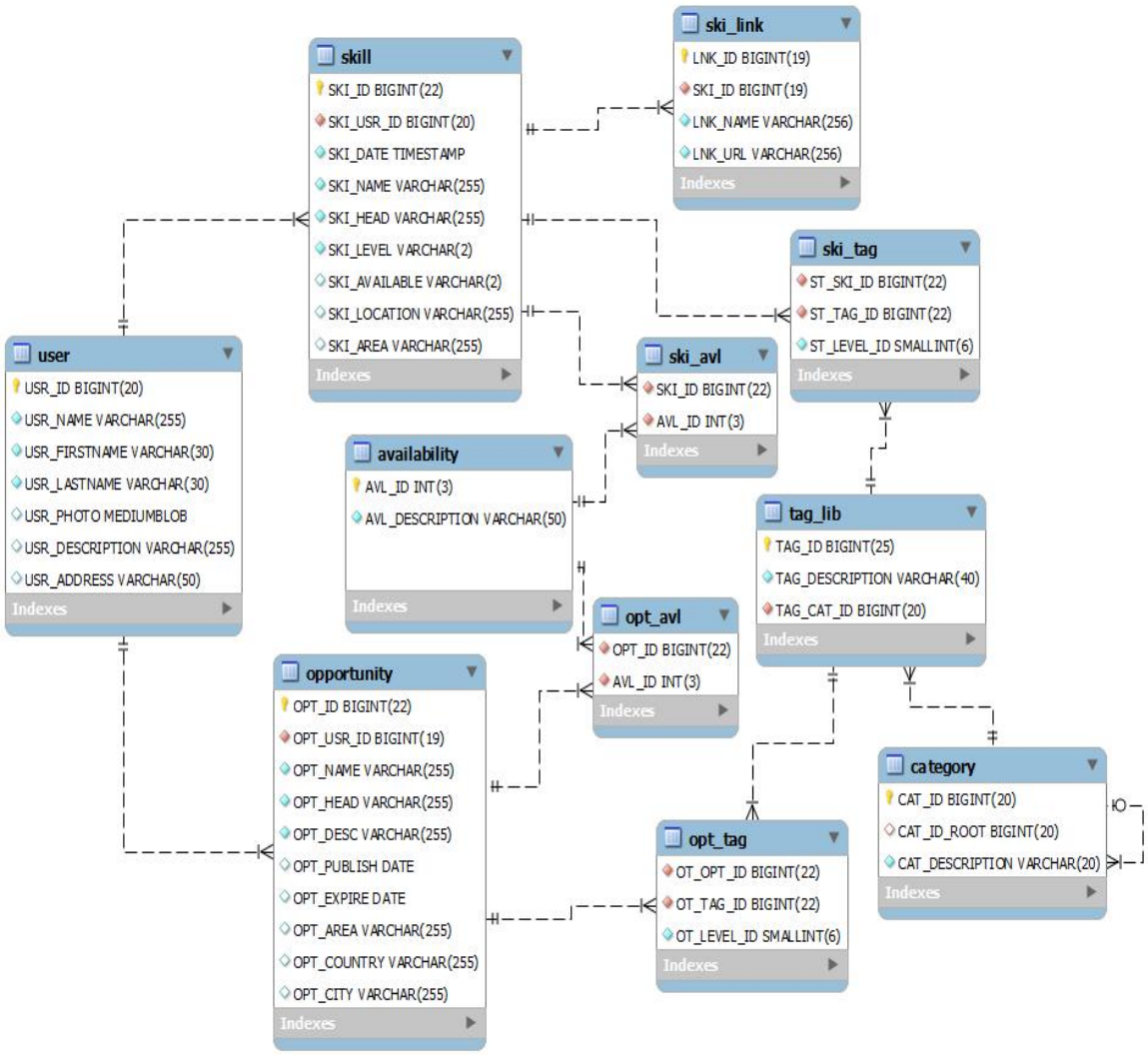


Figure 14. ER diagram of the application

One of the best features of Yii is its CRUD (create, read, update, and delete) implementing feature. Once we have finished our data model we can create our database and generate the models from the tables in our data model.

The relationships of our database will be found in the relations function in our model class as shown in Listing 1. The syntax for declaring relationship in Yii has the following format:

```
'VarName'=>array('RelationType', 'ClassName', 'ForeignKey',
...additional options)
```

- The VarName is the name of the relationship.
- RelationType indicates the type of relationship and can be one of the constant type: type: self::BELONGS_TO, self::HAS_ONE, self::HAS_MANY and self::MANY_MANY.
- ClassName name of the Active Record class related to this AR class.
- ForeignKey shows the foreign key(s) involved in the relationship.
- Additional options can be specified at the end for each.

Our ER diagram to display the list of skills is shown in the figure below.

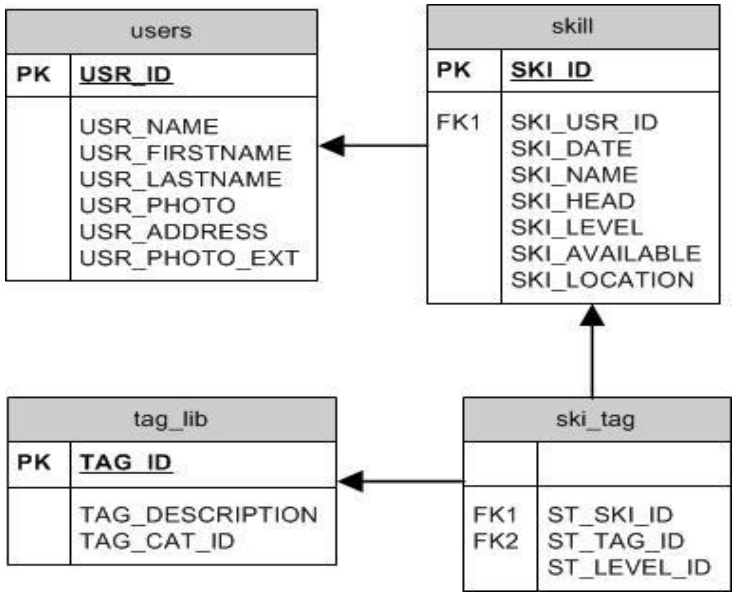


Figure 15. ER diagram showing the relationship between users with their skills and tag description.

The following code shows how we declare the relationships for the `Skill`, `User` and `TagLib` classes.

```
class Skill extends CActiveRecord
{
    ......

public function relations()
{
   return array(

//the relationship between skill and ski_tag tables in
//the model which shows skill.SKI_ID primary is used as
ski_tag.ST_SKI_ID Foreign Key
'skiTags'=>array(self::HAS_MANY,'SkiTag','ST_SKI_ID'),
//the relationship between skill and user table which
//shows users.USR_ID primary is used as skill.SKI_USR_ID
//Foreign Key
'sKIUSR'=>array(self::BELONGS_TO,'User','SKI_USR_ID'),

//the relationship between the skill and tag_lib tables
//through ski_tag table
'tags'=>array(self::MANY_MANY,'TagLib',
                        'ski_tag(ST_SKI_ID, ST_TAG_ID)'),

   }
}



class User extends CActiveRecord
{
    ......

public function relations()
{
 return array(

//the relationship which shows user table with skill
'skills'=>array(self::HAS_MANY,'Skill', 'SKI_USR_ID'),
       );
    }
}

class TagLib extends CActiveRecord
{
    ......

public function relations()
{
return array(
```

```
        //the relationship between tag_lib and ski_tag table in
        //our TagLib model
        'skiTags'=>array(self::HAS_MANY,'SkiTag','ST_TAG_ID'),

                );
            }
        }
```

Listing 1. declare the relationships for the Skill, User and TagLib classes .

As listing 1 illustrates, everything except the tags relation in the Skill model all the above model classes relations are generated using the Yii's Gii tool which is a powerful Web-based cod generator.

To display the list of skills shown in the figure below, we need the picture, name of the skill, skill headline, and tags fields from the relationships that we created.

Figure 16. The skill list view

One of the methodes for performing relational query is the eager loading approach. It retreives the related AR instances together with the main AR instance(s). It can be achieved by using one of the find or findAll methods in AR. Listing 2 below returns skills together with their user and tags.

```
$users=Skill::model()->with('sKIUSR','tags')->findAll(
            array(

                        'order' => 't.SKI_ID DESC',

                        'limit'=>5

));
```

Listing 2. Specify multiple relationship with the eager loading approach.

5 Results

The final result of the application will be accessed through Spark Skills Facebook page. In order to accomplish our final task we must create a Facebook application. This requires going through the first seven steps that are listed below.

Step 1: You must create a Facebook page and go to *developers.facebook.com* and click *login* or login to Facebook and at the bottom of the page click the *Developer* link as shown in the figure below.

Figure 17. Screen capture of the developer link.

Step 2: Once you are in the developers page click the *Apps* link. The figure below shows that it is on the right corner.

Figure 18. Screen capture of the apps link.

Step 3: The Facebook developers will request permission just like the figure below and click *Allow*.

Figure 19. Screen capture of the permission dialog.

Step 4: Click the *Create New App* button to create the application as shown in figure 19.

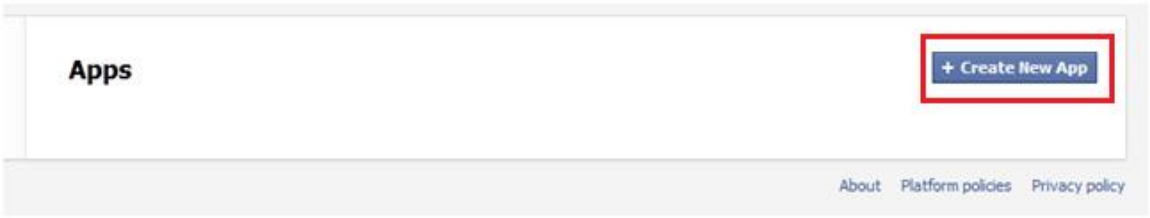


Figure 20. Screen capture of the create new app button.

Step 5: Fill in the *App Name* (Name for your app as displayed to users) and *App Namespace* (Name space of your app used for Open Graph and Canvas page) and click *Continue*.

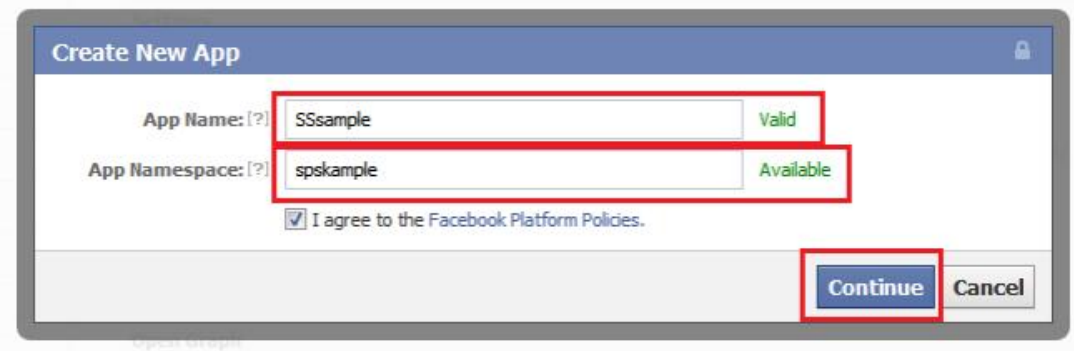


Figure 21. Screen capture of the create new app dialog.

Step 6: Next you will get the security checking dialog fill in the *text* and click *Submit*.

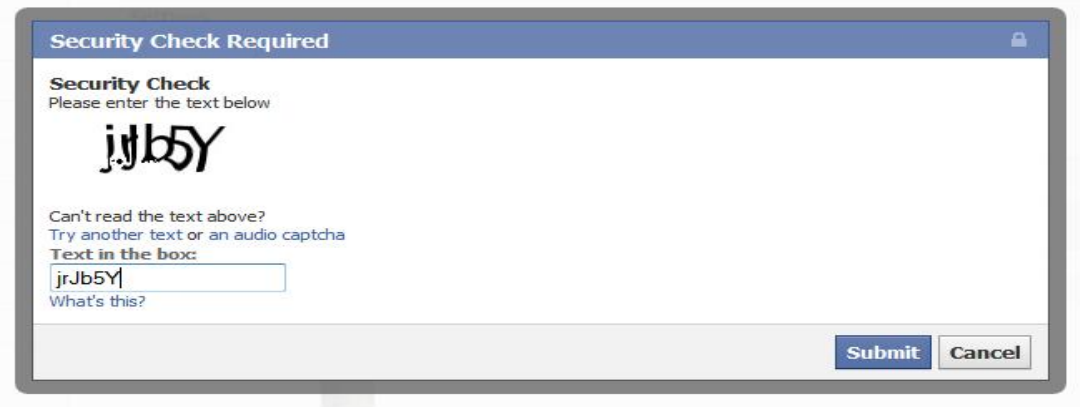


Figure 22. Screen capture of the security check dialog.

Step 7: Finally your Facebook application is created.

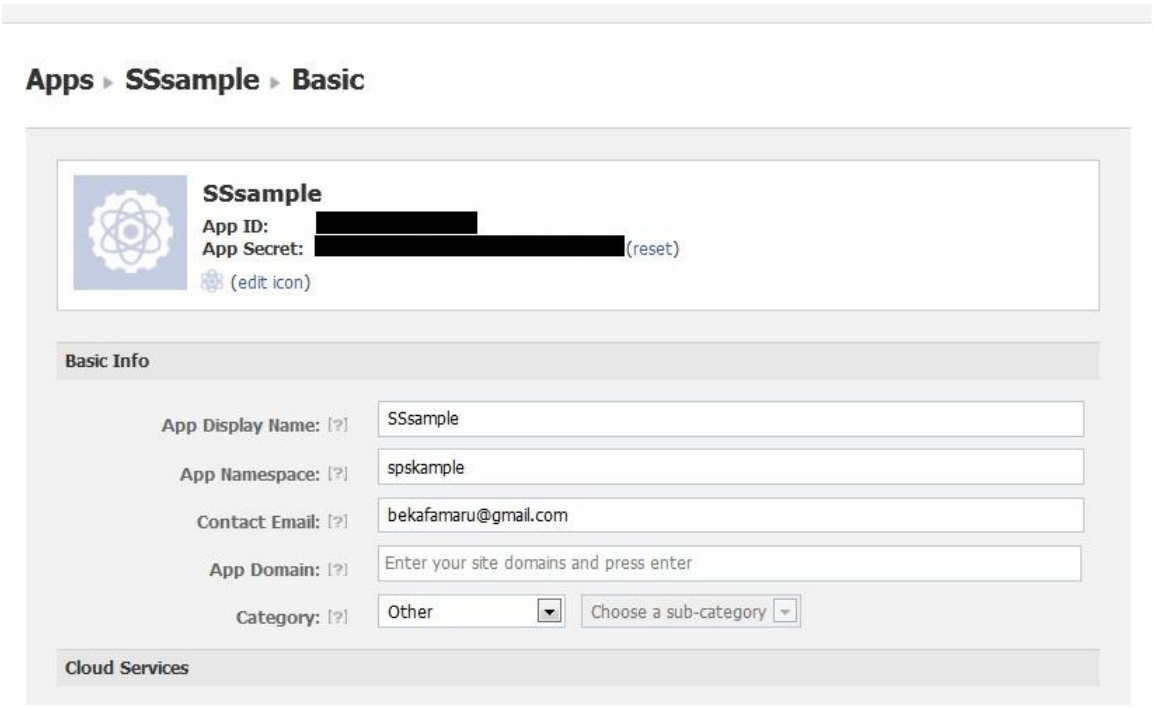


Figure 23. Screen capture of basic apps setting.

After finishing the above seven steps the next thing we must do is to set the integration settings for the App on Facebook, Page Tab, and Websites. In the App on Facebook we have three settings as shown in the table below.

The App on Facebook Integration Setting	
Canvas URL	The path where our application resides.
Secure Canvas	The secured path of our application for users on HTTPS.
Canvas Page	The URL of our application on Facebook and it has the following format: http://apps.facebook.com/app_namespace. The app namespace we set on the fifth step from the above seven steps

Table 2. The App on Facebook Integration Setting

The figure below shows the three setting of the App on Facebook setting.

Figure 24. Screen capture of the application setting.

The Page Tab Setting have five options. The page

Page Tab Name	The title of the Page app that users will be viewing.
Page Tab URL	The URL that will be loaded when the users clicked the tab.
Secure Page Tab URL	The secure URL that will be loaded when the users on HTTPS clicked the tab.
Page Tab Edit URL	URL given for the page Admin for customization.
Page Tab Width	Sets the page width of our app

Table 3. The Page Tab Setting

The diagram below shows the page tab settings our application.

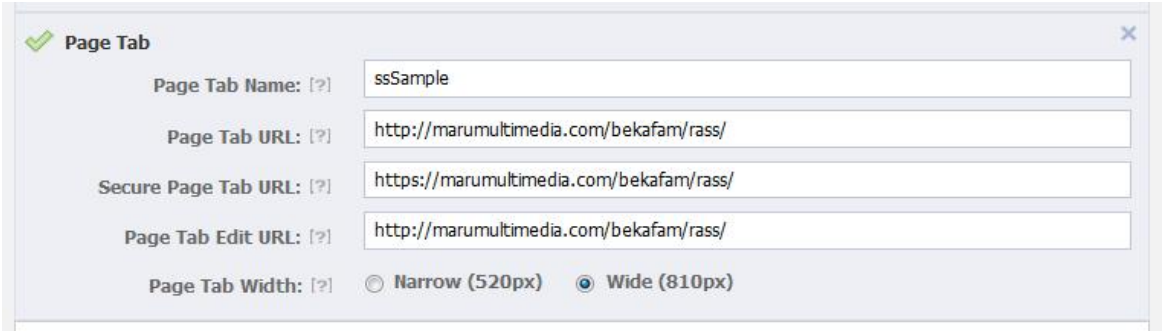


Figure 25. Screen capture of the page tab setting.

The page tab width can be set to Narrow (520px) or Wide (810px) as shown in the figure below. The figure also shows how it looks in our application.

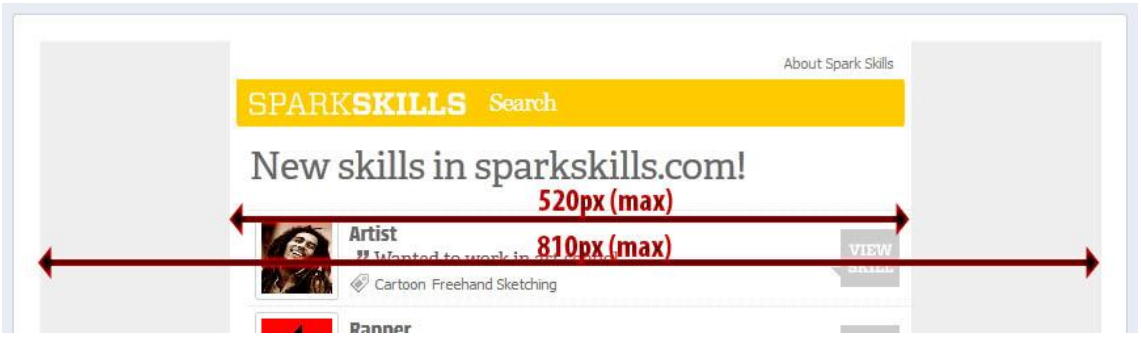


Figure 26. The size of our application.

The Website integration setting has only one option which is *Site URL* and it is the URL for your website. The figure below shows the setting for our application.

Figure 27. screen capture of the page tab setting.

Finally to install the application in the Facebook page as a tab we should use our application id and the URL of the server where our application resides in the link below.

https://www.facebook.com/dialog/pagetab?app_id=*YOUR_APP_ID*&next=YOUR_URL

In this case it will be like this:
https://www.facebook.com/dialog/pagetab?app_id=123456789&next=http://marumultimedia.com/bekafam/ssSample/

After running the link you will get the dialog shown in figure 27 below and select the page that you wanted to add the app and click the Add Page Tab button.

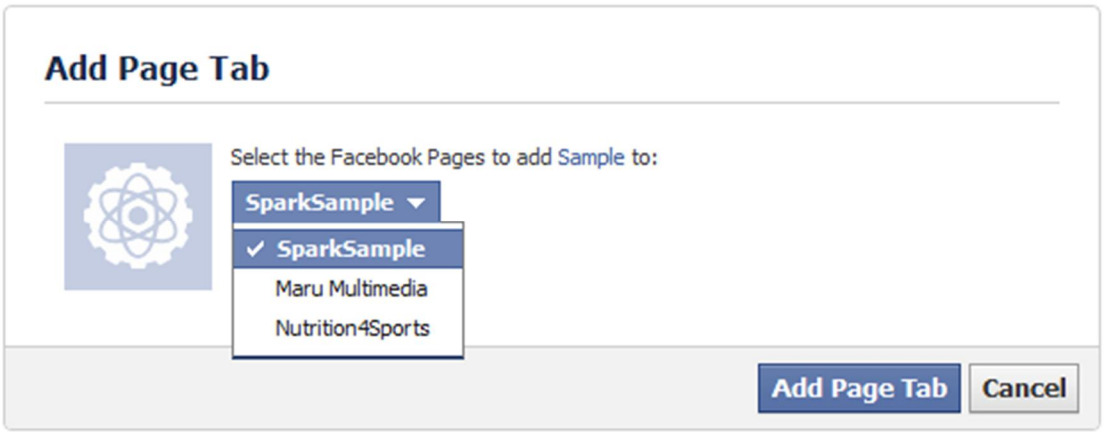


Figure 28. The Add Page Tab dialog.

When we are done with the above steps our application home page will look like the image shown below.

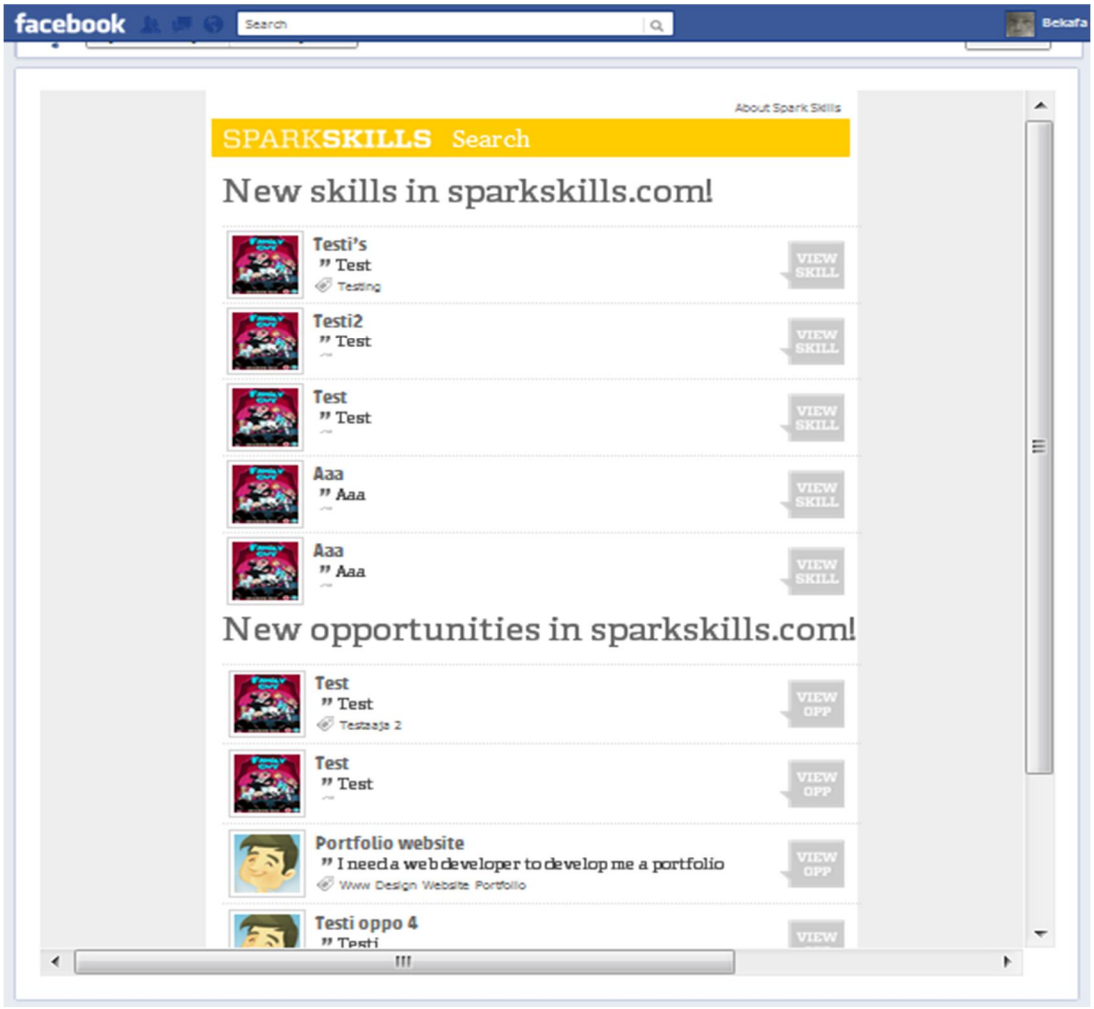


Figure 29. The Skills and Opportunities List page of the Application

In the end after setting the FB Comment and FB Like button the final result or our application's detailed view will have the exact layout as in figure 29.

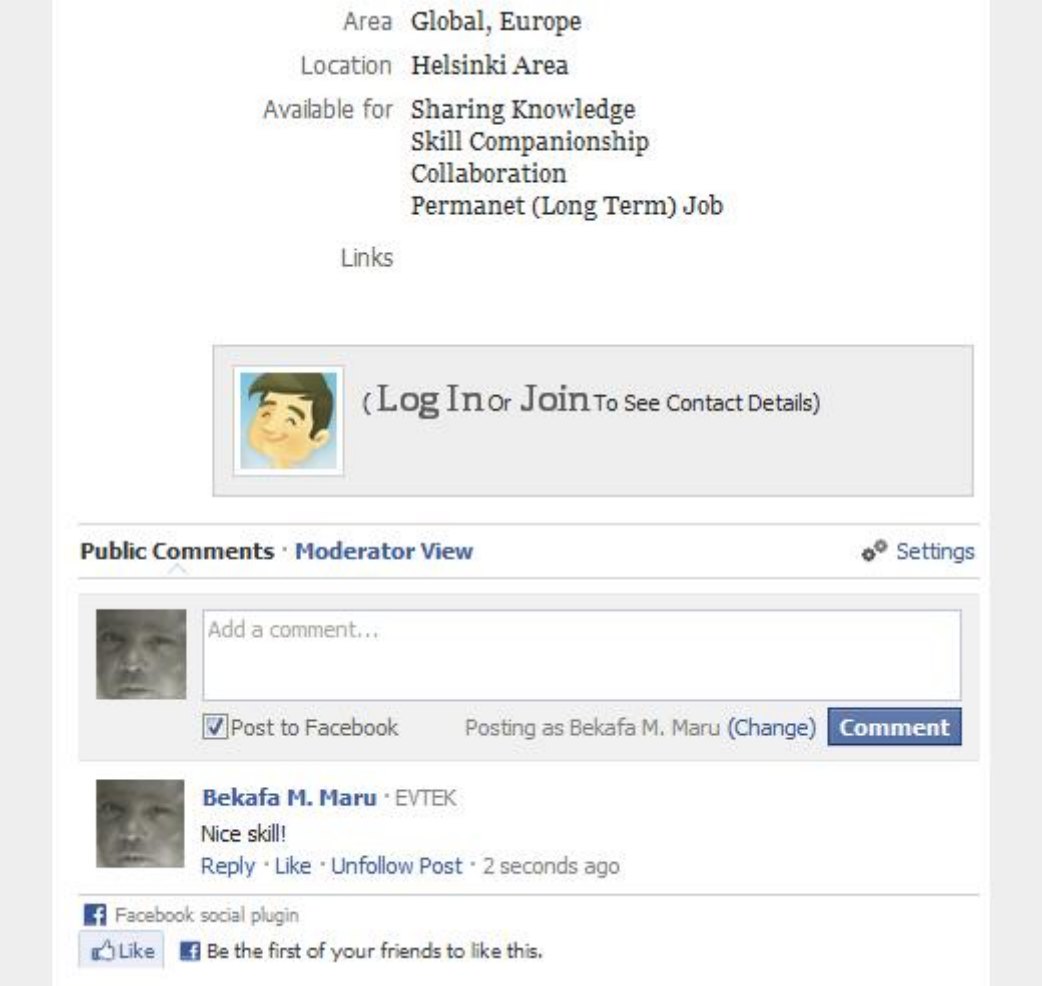


Figure 30. Detail view of the application.

The persons using the comment and like feature will spread what they liked and commented on their Facebook network with the same kind of template as shown in figure 29. When the person has clicked the link, it will be redirected to the same page where the comment or the liked has been made.

Figure 31. How the comment looks on the wall of the person who made it.

To generate the above layout we must put the meta tags listed below to the header of our main.php file located in the view:

```
<meta property="fb:app_id" content="APP_ID" />
<meta property="og:title" content="Spark Skills" />
<meta property="og:image" content="THE_LOGO_IMAGE_URL" />
<meta property="og:description" content="Global Skill Database" />
<meta property="og:url" content="URL_TO_THE_ SITE_index.php">
```

Listing 2. Specify multiple relationship with the eager loading approach.

6 Conclusion

One of the main reasons Facebook was chosen for this project was for its enormous number of users. Promoting the some of the Spark Skills company services through Facebook will drive traffic to the main site of the company. Some of the drawbacks that I have encountered were its constant updating on the Facebook platform. Some of the features such as the Facebook Markup Language (FBML) will no longer be available in the near feature (June 1,2012). Since we used the Graph API it will not be a problem anymore.

The transition from the normal Facebook layout to time line was also one problem that we managed to correct and at the end the final outcome has met all the requirements. The integration should not be limited to Facebook. It can be done with other social networking sites such as Twitter, LinkedIn, Digg etc. The activities on the application

can be monitored using the Facebook Insights. This will give us a clear understanding of our application users.

In Facebook we share the same interest with most of the people in our network and the probability of the people checking out what we liked and commented is higher. This final year study shows how Facebook can be used as a social media optimization channel with some of the features of the Spark Skills site in order to bring more Facebook users for building communities for it.

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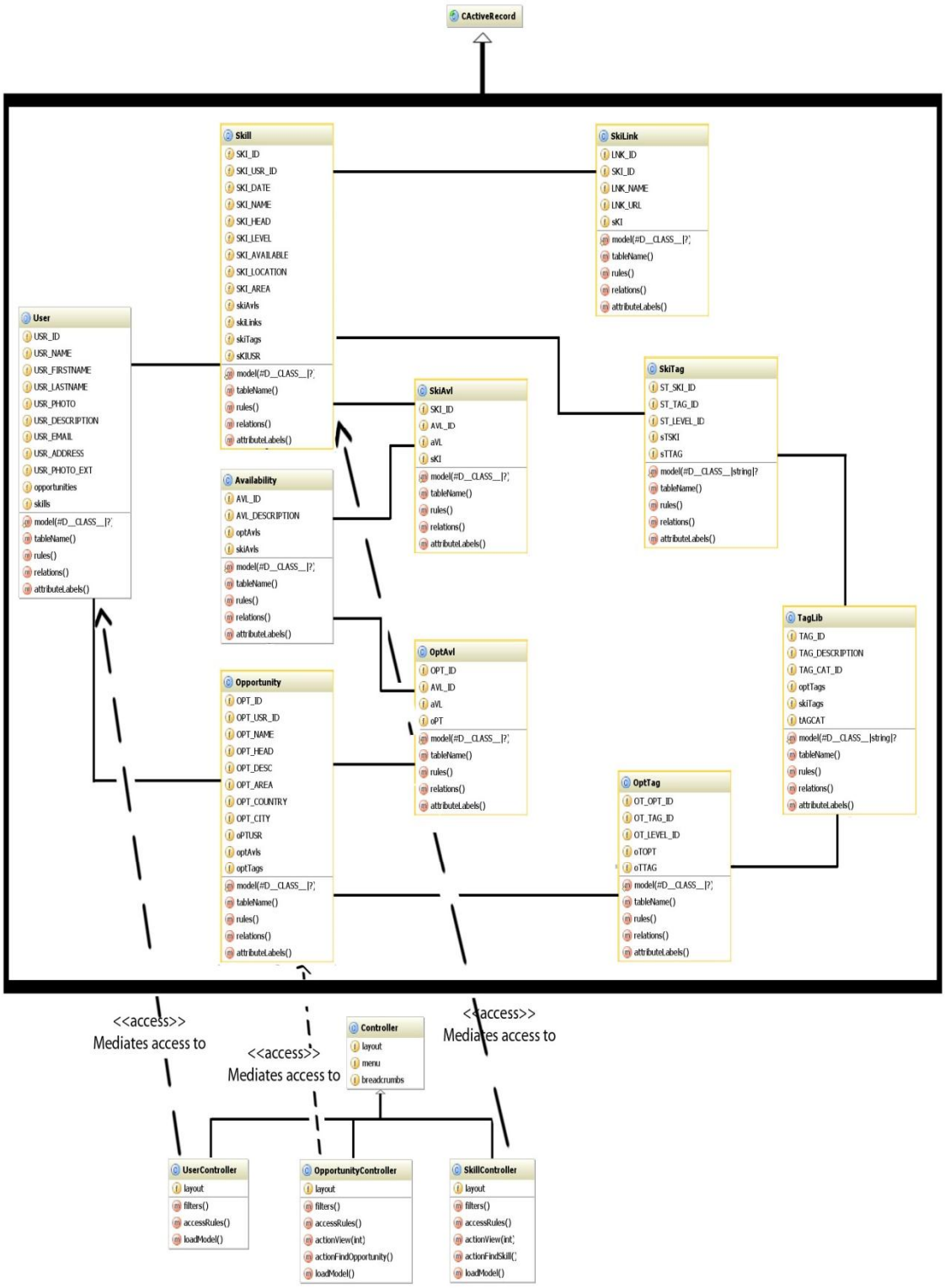
Class Diagram



Source codes for the plugins

Some plugins will not work without a Facebook application ID. The simplest method is to set it as 'fbAppId' parameter in the Yii configuration file.

```
// application-level parameters that can be accessed
'params'=>array(
                'fbAppId' => 'YOUR_APP_ID',
),
```

Set the application ID for all plugins of the same type. In your Yii configuration file under components:

```
'widgetFactory' => array(
        'widgets' => array(
           'LiveStream' => array(
              'app_id' => 'YOUR_APP_ID',
           ),
        ),
```

Creating the widget

The extension uses the javascript SDK version of the facebook plugins, which work with the Open Graph protocol.Open Graph properties, except for 'url', are passed as the 'og' parameter to the plugin.

```
$og = array(
   'title' => 'The coolest site on the WWW',
   'type' => 'website',
   'site_name' => 'My Awesome Site',
   'image' => $this->createAbsoluteUrl('../../../images/pic.jpg'),
);
```

To instantiate the plugin, pass the Open Graph properties and the URL of the current page. The application ID should also be set if it isn't defined in the config

file.

FB Comments

```
$this->widget('ext.faceplugs.Comments', array(
  //'app_id'=>'APPID', // not needed if set in Yii configuration file
   'href'  =>  $this->createAbsoluteUrl('/?r=skill/view&id='.$smodId),  // href must be the url of the page
   'numposts'=>5,
   'width'=>500,
   'og' => $og
                ));
```

FB Like Button

```
$this->widget('ext.faceplugs.LikeButton', array(
   //'app_id'=>'APPID',   //   not   needed   if   set   in   Yii   configuration   file
   'url' => $this->createAbsoluteUrl('/?r=skill/view&id='.$smodId), // url must be  the url of the page

   'og' => $og
));
```

Setting up the facebook-connect

In the application main layout (protected/views/layouts/main.php) we need to import the widget

```
<?php
$this->widget('application.extensions.facebook.FbLogin',
array(
        'devappid'=>'12345689',
   //your appilaction id
        'devsecret'=>'b1490a32d4c7750d248fb18afa719a5d',
//your application secret
```

```
        'cookie'=>FALSE,
));
?>
```

We need to create this component class FBIdentity (protected/components/ FBIdentity.php)

```
class FBIdentity extends CUserIdentity{
    private $_id;
    public function authenticate(){
    $this->_id = $this->password;
    return $this->errorCode==self::ERROR_NONE;
    }
    public function getId()
    {
    return $this->_id;
    }
}
```

We need to add the function below to our main controller (protected/controllers/SiteController.php)

```
protected $_identity;
 public $_logouturl;
 public function actionFblogin(){
        if($this->_identity===null)
        {
            $this->_identity=new FBIdentity($_GET['username'],$_GET['userid']);
```

```
            $this->_identity->authenticate();
            $this->_logouturl = $_GET['logout'];
            $error = 0;
            if($error===FBIdentity::ERROR_NONE){


            $duration=3600*24*30;
            Yii::app()->user->login($this->_identity,$duration);
            $this->redirect(Yii::app()->homeUrl);
            }else{
           return false;
            }
        }
}
```